Table 9: Output Matrix Values

1.0000
0.9470
0.9678
0.9995
0.0000
0.9999
2705.0000
0.3227
0.3534

The turbidity value is then calculated by multiplying the one-column, nine-row Output Matrix by a nine-column, one-row Turbidity Output Weight Matrix according to the following equation and known matrix multiplication techniques.

Turbidity Value = Output Matrix * Output Weight Matrix

In this example, the values of the Turbidity Output Weight Matrix are shown in the following Table 10:

Table 10: Turbidity Output Weight Matrix Values

-0.107225	-2.957877127	2.378329542	1.866207268	0.012793	-1.741858375	1.38488E-04	-0.08976299	0.401581

As with the values of the Turbidity Input Weight Matrix, the Turbidity Output Weight Matrix values have been calculated and programmed into the controller 192 based on past empirical data and observations, and remain constant for all of the readings at all of the time intervals. The Turbidity Value is thus calculated as 0.00459741. This value is then plotted on the graph as shown in Fig. 8.

The redox and turbidity values are calculated for each well based on the readings taken for each well at each time interval (i.e., each twenty minute time

Table 9: Output Matrix Values

1.0000
0.9470
0.9678
0.9995
0.0000
0.9999
2705.0000
0.3227
0.3534

The turbidity value is then calculated by multiplying the one-column, nine-row Output Matrix by a nine-column, one-row Turbidity Output Weight Matrix according to the following equation and known matrix multiplication techniques.

Turbidity Value = Output Matrix * Output Weight Matrix

In this example, the values of the Turbidity Output Weight Matrix are shown in the following Table 10:

Table 10: Turbidity Output Weight Matrix Values

-0.107225	-2.957877127	2.378329542	1.866267268	-0.012793	-1.741858375	1.384881404	-0.089762266	-0.145581

As with the values of the Turbidity Input Weight Matrix, the Turbidity Output Weight Matrix values have been calculated and programmed into the controller 192 based on past empirical data and observations, and remain constant for all of the readings at all of the time intervals. The Turbidity Value is thus calculated as 0.00459741. This value is then plotted on the graph as shown in Fig. 8.

The redox and turbidity values are calculated for each well based on the readings taken for each well at each time interval (i.e., each twenty minute time interval in this example), and the values are plotted on a graph as shown in Fig. 8. A local regression algorithm (LOESS) smoothes the time series data for both the redox and turbidity values